

## Document Log Item

<b>Addressing</b>			
<b>From</b>		<b>To</b>	
George Robin/R9/USEPA/US		Adam Freedman/R9/USEPA/US@EPA Adam Freedman/R9/USEPA/US	
<b>CC</b>		<b>BCC</b>	
R9-Deep			
<b>Description</b>		Form Used: Reply	
<b>Subject</b>		<b>Date/Time</b>	
Re: Fw: CO2 Injection Well - State Primacy		10/01/2009 01:07 PM	
<b># of Attachments</b>	<b>Total Bytes</b>	<b>NPM</b>	<b>Contributor</b>
0	24,178		
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## Body

## Document Body

Deliberative Ex. (b)(5)

- Deliberative Ex. (b)(5) [Redacted]
- [Redacted]

Adam Freedman---09/18/2009 04:33:09 PM--- Deliberative Ex. (b)(5) [Redacted]

From: Adam Freedman/R9/USEPA/US  
To: R9-Deep  
Date: 09/18/2009 04:33 PM  
Subject: Fw: CO2 Injection Well - State Primacy

Deliberative Ex. (b)(5) [Redacted]

----- Forwarded by Adam Freedman/R9/USEPA/US on 09/18/2009 04:31 PM -----

From: "Chan, Victor M." <VMChan@SolanoCounty.com>  
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To: Adam Freedman/R9/USEPA/US@EPA  
Cc: "Profant, Michael E." <MEProfant@SolanoCounty.com>  
Date: 09/18/2009 04:20 PM  
Subject: RE: CO2 Injection Well - State Primacy

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I already recommended to our planning division that a seismic study should be performed to look into this situation. Shell Oil admitted that the fault is 1-1/2 miles away. Too close for my comfort since the radius of influence may depend on a lot of variables that is beyond my expertise.

The seismic study will be just a preliminary report to allow the pilot model to proceed with only a cursory review of the geological data. A qualified seismic consultant must concur with Shell Oil's preliminary findings that the pilot project is a low risk.

During the construction of the pilot well and pilot CO2 injection, seismic data will be taken. Then the preliminary seismic study will be expanded into a final report prior to full scale CO2 injection. Based on the seismic data and other factors, the qualified seismic consultant must concur that the full scale project is also a low risk.

After the risk assessment is completed, the financial assurance is supposed to cover the remaining risks.

Victor M Chan, PE, BCEE

**From:** Freedman.Adam@epamail.epa.gov [mailto:Freedman.Adam@epamail.epa.gov]

**Sent:** Friday, September 18, 2009 2:17 PM

**To:** Chan, Victor M.

**Subject:** RE: CO2 Injection Well - State Primacy

Victor,

I share your concern about the relative proximity of the project area to the Vaca-Kilby Hills and Midlands Fault systems, as this was one of the points that I raised while at the Solano County planning meeting with Shell. I will be investigating this element of the permit application quite closely, and will follow up with Shell if I believe the situation merits it. I will be looking closely at both our proposed Class VI regulations and the CO2 sequestration permit that our region recently approved to determine what the minimum setback distance should be for a project of this small a magnitude from a geologic fault. If over the course of your communications with Shell, you learn any new information about the faults, please let me know, and I will do the same with you.

Normally, the financial assurance exclusively concerns the ability of an operator to plug and abandon their well, as EPA does not have any funding of its own to carry out the job; the financial assurance does not have to do with public health. However, I will discuss Financial Responsibility with the permit writer of the Arizona permit to see if any other elements of the project were taken into account when calculating financial assurance figures.

I will be out of the office next week on travel in Bakersfield so I will have limited access to email. However, if you would like to be in touch, please send email or call (650-269-9397) and I can hopefully write back or pick up (service is spotty in the field out there).

Best,  
Adam

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From: "Chan, Victor M." <VMChan@SolanoCounty.com>  
To: Adam Freedman/R9/USEPA/US@EPA  
Cc: "Cliche, David W." <DWCliche@SolanoCounty.com>, "Bell, Jeffery" <JBell@solanocounty.com>, "Leland, James H." <JHLeland@SolanoCounty.com>, "Laughlin, James W." <JWLLaughlin@SolanoCounty.com>, "Profant, Michael E." <MEProfant@SolanoCounty.com>, "Kaltreider, Misty C." <MKaltreider@solanocounty.com>, "Burton, Nicholas S." <NSBurton@SolanoCounty.com>, "Schram, Stanley J." <SJSchram@SolanoCounty.com>, R9-Deep  
Date: 09/10/2009 12:14 PM  
Subject: RE: CO2 Injection Well - State Primacy

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Thanks for your reply for bring more clarity to joint primacy. In reply to your question about potential conditions to our use permit:

I am still concerned about this project inducing an earthquake. The basis for my concern is the proximity of the Vaca-Kilby Hills fault which appears to be only 1 to 2 miles from the site. Shell Oil did not disclose the precise distance to me which raises a disclosure issue. I did overlay a California Geological fault map with the proposed project site map in order to estimate this 1 to 2 mile distance. The CO2 injection will expand underground but I do not know if the CO2 will reach the fault. Even if the CO2 does not cause a seismic event, you should be concerned about CO2 possibly migrating up the fault and contaminating the upper aquifers.

Shell Oil is trying to contact me since I am raising these issues. I do intend to ask the question to Shell Oil on the exact distance from the injection well to the Vaca-Kilby Hills fault. Please understand that if the fault distance is 15 to 20 miles away, I would not be raising this issue. 1 to 2 miles is a bit close to me. This raises another question for the EPA. Does the US EPA have a

safe setback distance for a Class VI well from a geological fault? If a safe setback distance has not been developed yet due to a lack of data, then a seismic study is fully justified.

In your email, I noticed you may invoke some Financial Responsibility to the EPA permit. I am interested in the Financial Responsibility conditions of your permit because my questions are all about public safety and risk management. Please let us know if the US EPA has a safe setback distance from a geological fault and some advance details of the Financial Responsibility that you may have in your EPA permit.

Vic

**From:** Freedman.Adam@epamail.epa.gov [<mailto:Freedman.Adam@epamail.epa.gov>]

**Sent:** Wednesday, September 09, 2009 5:21 PM

**To:** Chan, Victor M.

**Cc:** Cliche, David W.; Bell, Jeffery; Leland, James H.; Laughlin, James W.; Profant, Michael E.; Kaltreider, Misty C.; Burton, Nicholas S.; Schram, Stanley J.; R9-Deep@epamail.epa.gov

**Subject:** Re: CO2 Injection Well - State Primacy

Victor,

Thank you for keeping me updated as to the proceedings of the Solano County Use Permit planning meetings. Could you provide some specifics concerning the "conditions" with the permit that you discussed this morning?

I am happy to provide you with the requested information.

The answer to your question concerning the State of California as a "joint primacy state" also applies to your question as to who is responsible for enforcement of EPA's permit conditions. California is regarded as having joint primacy because the state has primacy for Class II wells (oil & gas-related), while the federal EPA has direct implementation authority for all other classes of well (including Class V, under which the proposed Shell permit would fall). Therefore, U.S. EPA will be responsible for enforcing the permit conditions once it has been issued to Shell. As a note, California Division of Oil, Gas and Geothermal Resources (DOGGR) is the state authority in charge of enforcing and regulating Class II operations.

As to whether EPA will use proposed requirements for Geologic Sequestration of CO<sub>2</sub> (EPA 816-F-08-032), the answer is partially yes. Until the proposed Class VI regulations are finalized, EPA has some discretion as to which regulations are invoked during the process of writing the permit. Class I-Nonhazardous regulations will serve as an existing guideline, as Class I wells are deep, technically sophisticated wells that dispose of waste below the lowermost Underground Source of Drinking Water (USDW). The construction of Shell's proposed Class V wells are quite similar in nature to Class I wells, and Shell will thus be held to many of the same construction standards as Class I operators. We will also be considering some parts of the Class I-Hazardous regulations, especially as it pertains to Financial Responsibility. That said, EPA will certainly take Draft Class VI regulations into account as well, especially with regard to testing, monitoring, site characterization and injectate modeling. Since the proposed well will operate under the authority of a Class V-Experimental permit, EPA has the flexibility to craft the permit requirements in a manner as appropriate and reasonable as possible, using whichever Class regulations it sees fit in order to most effectively protect USDWs.

When EPA has crafted its draft permit, I will ensure that you receive a copy of it. We only recently completed the Administrative Review of Shell's permit application. As the Technical Review proceeds, I will have more specifics for you about which requirements EPA will be including in the draft permit; We understand and share your desire to ensure that no conflicts exist between the permits so we hope that Solano County will be able to share their draft permit

with us as well. In addition, all correspondence between EPA and Shell (and vice versa) will be shared with DOGGR, the California Regional Water Quality Control Board, as well as Solano County for the purpose of avoiding these conflicts as much as possible. We don't believe that duplication between permits will be an issue, though perhaps maintaining some consistency among the agencies with regard reporting and other requirements would be a good idea. We usually welcome any such cooperation. As one other note, if you are looking for some guidance as to what types of requirements will be included in Shell's proposed permit, please see the Final Permit and accompanying documents for "Arizona Public Services Draft UIC Class V Experimental Permit for Carbon Sequestration" on the following webpage: <http://www.epa.gov/region09/water/groundwater/uic-permits.html#apsVep>

If you have any follow-up questions, please feel free to be in touch.

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From: "Chan, Victor M." <VMChan@SolanoCounty.com>

To: Adam Freedman/R9/USEPA/US@EPA

Cc: "Bell, Jeffery" <JBell@solanocounty.com>, "Leland, James H." <JHLeland@SolanoCounty.com>, "Profant, Michael E." <MEProfant@SolanoCounty.com>, "Cliche, David W." <DWCliche@SolanoCounty.com>, "Kaltreider, Misty C." <MKaltreider@solanocounty.com>, "Burton, Nicholas S." <NSBurton@SolanoCounty.com>, "Schram, Stanley J." <SJSchram@SolanoCounty.com>, "Laughlin, James W." <JWLaughlin@SolanoCounty.com>

Date: 09/09/2009 01:51 PM

Subject: Injection Well - State Primacy



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Adam

We had a planning meeting on the CO2 Injection Well this morning. You should be aware that there may be some conditions with the Solano County's Use Permit.

One issue that came up during today's meeting is about jurisdiction and enforcement on this relatively new program.

According to the EPA homepage on state primacy located at: <http://www.epa.gov/safewater/uic/primacy.html> The State of California is a "joint primacy state" for the UIC program which need clarification. I also have the following questions for the US EPA:

1. Once you issue your EPA permit, who is responsible for enforcement of the EPA's permit conditions? (i.e. will EPA enforce the permit conditions or is enforcement delegated to California?)
2. Will your EPA permit invoke the "proposed" EPA requirements for Geological Sequestration of CO2 (EPA 816-F-08-032) that is now undergoing public review?
3. Can I get a DRAFT of your EPA permit? I would like to coordinate the EPA's requirements with the county requirements to ensure no conflict, avoid duplication and ensure completeness.

**Victor M Chan, PE, BCEE**

**Solano County Civil / Environmental Engineer**

**Board Certified Environmental Engineer [www.aaee.net](http://www.aaee.net)**

**707-784-3177**